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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,978	01/23/2004	Plamen Denchev	205502-9037	9303
1131 7590 02/11/2009 MICHAEL BEST & FRIEDRICH LLP Two Prudential Plaza 180 North Stetson Avenue, Suite 2000 CHICAGO, IL 60601				
EXAMINER				
HWU, JUNE				
ART UNIT		PAPER NUMBER		
1661				
MAIL DATE		DELIVERY MODE		
02/11/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,978

Applicant(s)

DENICHEV ET AL.

Examiner

JUNE HWU

Art Unit

1661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,13,14,16-22,43,50 and 52-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,13,14,16-22,43,50 and 52-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The amendment filed on December 22, 2008 is acknowledged and entered.

Status of the Claims

Claims 2-4, 7-12, 15, 23-42, 44-49, and 51 are cancelled and claims 1, 5-6, 13, 14, 16-22, 43, 50, 52-60 and newly added 61-63 will be examined on the merits.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-6, 13, 14, 16-22 and 43 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Handley et al (U.S. Patent No. 5,491,090) in view of Schuller et al (Plant Cell, Tissue and Organ Culture 60: 23-31, 2000) and further in view of Find (U.S. Patent No. 6,897,065 B1).

Handley et al teach a method of regenerating *Pinus taeda* in liquid medium, wherein the immature zygotic embryo is culture on initiation (induction) medium that is semi-solid containing a sugar selected from the group consisting of glucose, maltose, sucrose, melezitose and combination thereof (col. 5, lines 62-64, Table II and claim 1), which would include at least two types of sugars (emphasis added). The induction medium contains 0.1 to 5.0 mg of auxin mg/l and 0.1 to 1.0 mg/l of cytokinin (col. 5, lines 59-61). Handley et al further taught that the liquid maintenance medium contains sugar selected from the group consisting of glucose, maltose (6% see Table 2), sucrose (3% see Table 2), melezitose, and combination thereof (col. 6, lines 3-9 and claim 1), which would include at least two types of sugars (emphasis added). The

maintenance medium also contains 0.1 to 100 mg/l of auxin and 0.05 to 10 mg/l of cytokinin (col. 6, lines 5-6 and Table II). The sugars were readily metabolized because the embryos further developed. The development (maturation) medium further comprises between 5 to 250 mg/l of ABA (col. 6, lines 17-18) with no auxin and no cytokinin (Table II). At weeks 6, 9 and 12, the embryos were suitable for germination when placed in the development medium (col. 17, lines 48-67). After 12 weeks on the development medium all of the 14 lines developed to stage 2 somatic embryos and in six lines developed to stage 3 somatic embryos (col. 18, lines 1-4). The somatic embryos were allowed to further develop with ABA and the development of cotyledon was noted (col. 19, lines 60 to col. 20, line 30).

Handley et al do not teach that lactose is the primary carbohydrate that is less than 6.0% of the nutrient medium. Handley et al do not teach that the prematuration medium contains less auxin and less cytokinin than the maintenance medium. Nor does Handley teach that the prematuration medium comprises of ABA.

Schuller et al teach the formation and maturation of somatic embryos of *Abies alba*. The proliferation medium was supplemented with sucrose and BA (N⁶ benzyladenine, cytokinin) (p. 24, col. 2, 1st full par.). The prematuration media were supplemented with either 58 mM sucrose or 58 mM lactose with or without BA (p. 24, col. 2 and Fig. 1). The maturation media were supplemented with different concentration of lactose and sucrose plus ABA (p. 24, col. 2 and Fig. 1). Schuller noted that the total number of somatic embryos and the number of normal somatic embryos were greater in lactose than with sucrose in the prematuration medium (p. 28, col. 1). Schuller further taught that the lactose containing media produce browning of the embryonal suspensor mass without proliferation; on the other hand, the lactose containing media produced somatic differentiation (p. 28, col. 1). Schuller taught that the combination of

lactose and sucrose in the maturation medium stimulated the maturation of the somatic embryos (p. 29, col. 2).

Find taught that suitable carbon sources may be sucrose, maltose, lactose, fructose, glucose, maltotriose, starch, galactose, etc. (col. 4, lines 3-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of reproducing coniferous somatic embryos, wherein the nutrient medium comprises of a combination of sugars, such as glucose, maltose, sucrose, melezitose in the initiation and maintenance media as taught by Handley et al and to modify that method by substituting one of the sugars with lactose in the initiation or maintenance medium as taught by Find because Find states that lactose is a suitable carbon source. Furthermore, it would have been obvious to try culturing somatic embryos supplemented with lactose with another sugar as taught by Schuller with different culture media, such as initiation, maintenance or prematuration media because lactose and sucrose favors somatic embryos differentiation as taught by Schuller. One would have been motivated to do so given that conifer are important timber crops. Furthermore, one of ordinary skill in the art would have reasonable expectation of success in using lactose and additional sugar in the initiation, maintenance or prematuration media because a combination of sugars would aid in the production of cotyledonary stage embryos.

With regard to the amount of lactose in the nutrient medium of more than 1.0% to less than 2.0%, it would have been obvious to one of ordinary skill in the art to use less lactose because Handley et al taught that the sugar content in the initiation and maintenance media is from about 5.0 to 100.0 g/l (Handley col. 10, lines 53-58). Thus, more than 1.0% to less than 2% equivalent well-metabolize carbon source such as lactose is acceptable. One of ordinary

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skill in the art would have been motivated to use less than 2% lactose in the nutrient medium because 2% is within the limit necessary for the development of embryos.

With regard to the prematuration medium comprising of ABA, it would have been obvious to one of ordinary skill in the art to try to use ABA in the prematuration medium because ABA affected the number of somatic embryos and differentiation of early and late torpedo stages as taught by Schuller et al (p. 28, col. 2). One of ordinary skill in the art would have been motivated to try to use ABA in the prematuration because if it worked in the maturation medium then it may work in the prematuration medium. Furthermore, one of ordinary skill in the art would have reasonable expectation of success in using ABA in the prematuration medium because it would be a choice of experimental design and is considered within the purview of the cited prior art.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had reasonable expectation of success in producing the claimed invention. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made as evidenced by the cited references.

Applicants' arguments filed December 22, 2008 have been fully considered but they are not persuasive.

Applicants urge that Handley does not mention galactose-containing sugars or lactose at all but only mentions the use of combination of sugars (response p. 8).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071,

5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, Handley was combined in view of Schuller and further in view of Find because Handley taught a method of regenerating *Pinus taeda* in liquid medium and was combined with Schuller who taught the formation and maturation of somatic embryos of *Abies alba*, wherein sucrose and lactose are the carbon source supplemented with ABA. It would have been obvious to one of ordinary skill in the art to substitute the lactose in the culture medium as taught by Schuller with the sugar selected from the group consisting of glucose, maltose, sucrose, and combinations thereof as taught by Handley because Schuller taught that the combination of lactose with sucrose in the maturation medium stimulated the maturation of somatic embryos (p. 29, col. 2). Moreover, Find taught that suitable carbon sources may be sucrose, maltose, lactose, fructose, glucose, maltotriose, starch, galactose, etc. Thus, it would have been obvious to combine the teachings of Handley in view of Schuller and further in view of Find.

Applicants urge that the use of carbon source during one phase of growth is not equivalent to use of the sugar for any purpose even if the cellular process involved is completely unrelated. Applicants further urge that those skilled in the art would expect the media used during different phases of growth to be different and points to Fowke Declaration filed on May 16, 2008 and Attree Declaration filed on May 16, 2008 (response p. 8).

This argument is not found persuasive because it would have been obvious to one of ordinary skill in the art to substitute the combination of sugars as taught by Handley in the induction medium, maintenance medium and development medium with the use of lactose and an additional sugar as taught by Schuller because Find taught that suitable carbon sources include galactose and lactose which could be substituted. The remaining components to the

induction, maintenance and prematuration media would contain specific growth hormones necessary for further development of the embryos. Thus, it would have been obvious to one of ordinary skill in the art to use lactose and an additional sugar in the induction, maintenance and prematuration media and supplement these media with growth hormones depending on the stage of the embryos.

With regard to Fowke Declaration, the induction, maintenance and prematuration media would obviously be different depending on the growth stage of the embryos. With regard to Attree Declaration, the induction, maintenance and prematuration media; it would have been obvious to alter the growth hormones amount or omitting a growth hormone depending on the growth stage of the embryos but the carbon source may be a combination of sugars or of one type. The induction medium would typically contain a nutrient medium supplemented with auxin and cytokinin as taught by Handley (col. 5, lines 56-67) to induce the explant to form embryogenic tissue; the maintenance medium would typically contain a nutrient medium supplemented with cytokinin and a combination of sugars as taught by Handley (col. 6, lines 3-11) to grow and maintain the embryogenic culture; and the prematuration medium would typically contain nutrient medium BA and lactose as taught by Schuller (Fig. 1) to prepare the embryogenic culture for transfer to maturation medium and development of mature embryos. All of these method steps require different concentration of growth hormones; however, the sugar selected is from the group consisting of glucose, maltose, sucrose, melezitose, and combinations thereof which could also be lactose.

Applicants urge that the teachings of Find could not be combined with Handley because Handley does not teach the use of lactose in induction, maintenance or prematuration media (response pp. 8-9).

This argument is not found persuasive because as stated above the rejection is based on the combinations of references to show obviousness. In addition, Find does teach the galactose and lactose are suitable carbon sources (col. 4, lines 5-7).

Applicants urge that Schuller teaches a nutrient medium for use in *Abies alba* and that the instant specification at page 7, lines 12-15 discloses that *Abies alba* has a distinct growth requirement than other conifers (response p. 9).

This argument is not found persuasive because the instant specification states that *Abies* spp. requires different plant growth regulators for the induction and proliferation media. The carbon source is not mentioned and may not be critical.

Applicants urge that Schuller demonstrate that in most cases no late cotyledonary stage embryos were obtained and that Schuller is silent to whether any of the embryos were capable of germination as required in the instant claims (response p. 9).

This argument is not found persuasive because Schuller was combined with Handley and Find to show the combinations of sucrose and lactose supplemented with ABA had an effect on somatic embryo maturation. Thus, it would have been obvious to try using lactose and an additional sugar in the induction, maintenance and prematuration media.

Applicants urge that the number of mature somatic embryos capable of germination using the method as claimed was surprising unexpected and cite Attree Declaration and Fowke Declaration (response p. 9).

This argument is not found persuasive because in the Attree Declaration, the Example 1 shows unexpected results for the induction medium with 1.5% lactose and 0.025% glucose. No other ranges or combination of lactose and additional sugars were shown. With regard to Example 3, the carbon source of 1.5% lactose did not include additional sugar as claimed. With regard to Examples 6 and 7, the examples show 1.5% galactose and 0.5% sucrose and do not

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mention lactose and additional sugar. No further ranges or combination of lactose and additional sugars were shown. Moreover, Fowke Declaration does not show any unexpected results. The MPEP 716.02(a) states, "Applicants must further show that the results were greater than those which would have been expected from the prior art to an unobvious extent, and that the results are of a significant, practical advantage." The Attree Declaration, Fowke Declaration, and pages 6 and 8 of instant specification do not show any evidence of greater than expected results.

Applicants urge that there was no adequate rationale for combining the references (response pp. 9-10).

This argument is not found persuasive because conifers are important timber crop and one of ordinary skill in the art would have been motivated to combine the teachings of Handley in view of Schuller and further in view of Find because Handley taught a method of regenerating *Pinus taeda*, wherein the carbon source is a combinations of different sugars; Schuller taught that sucrose and lactose supplemented with ABA in the maturation resulted in the maturation of somatic embryos; and Find taught that the carbon source may be sucrose maltose, lactose, fructose, glucose, maltotriose, starch, galactose, etc. for the maturation of somatic embryos. Thus, one of ordinary skill in the art would try to use lactose and additional sugar in the nutrient medium because the results would produce mature somatic embryos that would be capable of germination.

Claims 50 and 52-54 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Handley et al (U.S. Patent No. 5,491,090) in view of Fan et al (U.S. Patent No. 6,689,609).

The claims are drawn to a method of reproducing somatic embryo *Pinus taeda* or hybrid thereof comprising growing an immature embryogenic culture derived from an explant on a

nutrient medium selected from the group consisting of induction, maintenance or prematuration medium, comprising of between 1.0% and 6.0% lactose for the development of the explant to the cotyledon stage suitable for germination, wherein the maturation medium does not contain auxin or cytokinin.

The teachings of Handley et al are discussed above.

Handley et al do not teach that the nutrient medium comprises of lactose, wherein the lactose is between 1% and 6%.

Fan et al teach a method of nutrimpriming somatic embryos of pines and spruces (Example 4) to produce full-grown plants. The seeds are imbibed in water (initial phase or phase one) then the somatic embryos from the seeds are transferred to nutrimpriming solution for phase two comprising a carbohydrate source such as lactose (col. 10, lines 43-58) at a range of 3-6% (w/v). Phase two is the growth of the zygotic embryos (col. 9, lines 15-17) similar to the maintenance step, wherein the embryos are grown.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of reproducing coniferous somatic embryos, wherein the nutrient medium comprises of a combination of sugars in the initiation and maintenance media as taught by Handley et al and to modify that method by substituting one of the sugars with lactose in the initiation or maintenance medium as taught by Find because Find states that lactose is a suitable carbon source. One of ordinary skill in the art would have been motivated to do so because if lactose was used as a carbon source then it would have been obvious to try lactose on the initiation and maintenance media. One of ordinary skill in the art would have been motivated to do so given that *Pinus taeda* is an important timber crop. Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of

Handley and Fan because using lactose in the initiation or maintenance media would be a choice of experimental design and is considered within the purview of the cited prior art.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had reasonable expectation of success in producing the claimed invention. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Applicants urge that Fan relates to germination and not induction, maintenance or prematuration and that those skilled in the art would expect the media used during different phases of growth to be different and cites Fowke Declaration and Attree Declaration (response p. 11).

This argument is not found persuasive because Fan was combined with Handley to show that it would have been obvious to one of ordinary skill in the art to substitute a combination of sugars as taught by Handley with lactose because lactose is another type of carbon source. With regard to Fowke Declaration and Attree Declaration it would have been obvious to one of ordinary skill in the art to adjust the culture medium depending on the growth stage of the embryos and as discussed above the carbon source may be a combination thereof or of one type.

Applicants urge that Fan taught the use of lactose in the germination media and cannot be combined with Handley which does not teach the use of lactose at all (response p. 11).

This is not found persuasive because if lactose may be substituted for the carbon source then it would have been obvious to one of ordinary skill in the art to try to use the method of reproducing coniferous somatic embryos as taught by Handley with Fan who taught that lactose and the like may be used as a carbohydrate source.

Applicants urge that the results in Table 5 of the instant specification demonstrated unpredictable and unexpected results that lactose when used as the carbon source during maintenance and prematuration of loblolly pine somatic embryos increased the number of mature somatic embryos per gram of total tissue over sucrose or maltose (response p. 11).

This argument is not found persuasive because as stated above the Applicants have not shown any evidence of greater than expected results from the prior art references.

Claims 55-60 remain rejected and claims 61-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handley et al in view of Pullman et al (U.S. Patent No. 6,492,174). The rejection is modified from the rejection set forth in the Office action mailed August 21, 2008, due to Applicants' amendment of the claims.

The claims are drawn to a method of reproducing somatic embryo by somatic embryogenesis comprising growing an immature embryogenic culture derived from an explant on a nutrient medium selected from the group consisting of maintenance medium and prematuration medium, wherein the nutrient medium comprises between 1.0% and 6.0% of galactose and an additional sugar wherein the coniferous somatic embryo is selected from *Pinus taeda* or hybrids thereof, *Pinus radiata* or hybrid thereof, and *Pseudotsuga menziesii* and hybrid thereof, and developing the explant to obtain a cotyledon stage embryo suitable for germination, wherein the maturation medium does not contain auxin or cytokinin.

The teachings of Handley et al are discussed above.

Handley et al do not teach that the nutrient medium comprises of galactose containing sugar.

Pullman et al teach a method of initiating embryogenic cultures of early-midstage (stage 3-5) zygotic embryos (col. 18, lines 1-2) of *Pseudotsuga menziesii* (Douglas fir) (Example 2),

and stage 2-4 embryos (col. 19, lines 38-39) of *Pinus radiata* (col. 7, line 44) (Example 3), wherein the explant is induced in liquid media containing between 5 and 70 g/l of maltose (for example 1.5% see Table 47), glucose, fructose, sucrose (for example 1% - 1.5% see Table 3 and 5), galactose, or combination thereof (col. 9, lines 54-58), which would include at least two sugars one being galactose that is between 1% and 6%.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to reproduce coniferous somatic embryos, wherein the nutrient medium contains two sugars as taught by Handley et al or Pullman and to modify the sugars by using galactose as the primary sugar as taught by Pullman. Furthermore, Pullman noted that galactose, maltose, glucose, fructose, sucrose and combination thereof are effective carbohydrate energy source (col. 9, lines 54-57). One of ordinary skill in the art would have been motivated to do so given that sugar is necessary for further development of conifer embryos. Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of using galactose as the primary sugar and using sucrose or maltose as the secondary sugar, because Pullman states that a combination of sugar could be utilized (col. 9, lines 54-56).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had reasonable expectation of success in producing the claimed invention. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Applicants urge that one skill in the art would not have expected a combination of galactose-containing sugar and additional sugar in the maintenance or prematuration steps of somatic embryogenesis to be useful; much less that such a combination would produce superior results (response p. 12).

This argument is not found persuasive because Handley taught that the maintenance medium contains a sugar selected from the group consisting of glucose, maltose, sucrose, melezitose and combinations thereof and Pullman taught that the media contain readily metabolized carbohydrate source, such as maltose, glucose, fructose, sucrose, or galactose, or combinations thereof. One of ordinary skill in the art would try to use galactose instead of the sugars taught by Handley in the maintenance medium because galactose is a type of carbon source that could have produced the development of the somatic embryos capable of germination.

Applicants urge that the use of galactose-containing sugar and an additional sugar in the maintenance and prematuration stages yielded unexpected results which could not have been predicted from the teachings of Handley in view of Pullman and cites Example 10 (response p. 12).

This argument is not found persuasive because as stated above Applicants have not shown any evidence of greater than expected results from the prior art references. With regard to Example 10, the carbon source discloses the 0.5% galactose + 0.01% glucose; 0.5% galactose + 0.025% glucose; and 0.5% galactose + 0.05% glucose. No other combinations of other types of sugar or concentration of galactose such as 1% or 0.0256 were shown.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to June Hwu whose telephone number is (571) 272-0977. The Examiner can normally be reached Monday through Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anne Marie Grunberg, can be reached on (571) 272-0975. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/June Hwu/
Examiner, Art Unit 1661